WILDLIFE MANAGEMENT UNIT 25C - PLATEAU, BOULDER

Boundary Description

> **Wayne, Garfield and Piute counties** - Boundary begins at the junction of Highway SR-62 and Highway SR-24; east on SR-24 to the Notom Road; south on the Notom Road to the Burr Trail; west on the Burr Trail to Highway SR-12 in Boulder; west on SR-12 to the Antimony-Widtsoe Road; north on this road to Highway SR-22; north on SR-22 to Highway SR-62; north on SR-62 to SR-24 and beginning point.

In 1991, herd unit 51A (North Boulder) and 51B (South Boulder) were combined and renamed deer herd unit 44 (Boulder) in 1993. The unit was enlarged slightly and again renamed in 1996 as 25C (Boulder), which is now a subunit of Wildlife Management Unit 25. The other two subunits in Wildlife Management Unit 25 are 25A Fishlake and 25B Thousand Lake. Herd Unit 51B formerly included the high country of the Aquarius Plateau, which is commonly known as Boulder Mountain. It slopes down to the south and west through variable desert terrain that makes up the major portion of the winter range in Unit 25C. Herd unit 51A formerly enclosed areas to the north including Parker Mountain (Awapa Plateau), Boulder Mountain, Miners Mountain, and portions of the Waterpocket Fold and Capitol Reef National Park. Parker Mountain is an open rolling plateau with a maximum elevation of 9,600 feet and northeast exposure. The Aquarius Plateau is a high, lava-capped mountain plateau rising to 11,322 feet in elevation on Boulder Mountain. Miners Mountain is a large anticline located in the northeast corner of the unit. A small section along the west side of Parker Mountain drains west into Otter Creek. The remainder of the unit drains to the north into the Fremont River. Unit 25C now encompasses approximately 752,000 acres of summer range which is managed entirely by the Forest Service, and 896,700 acres of winter range, about 70% of which is managed by the BLM (Jense et al. 1992).

Precipitation ranges between 5 to 7 inches at Capitol Reef, 10 to 12 inches at Boulder and Escalante on the southern border, and 25 to 30 inches on Boulder Mountain. Municipalities located along the unit boundaries are Koosharem and Antimony on the west; Loa, Lyman, Bicknell, Teasdale, and Torrey on the north; with Escalante and Boulder on the south side.

The private land is found in the valleys around the small communities of Antimony, Escalante, Boulder, and Bryce Valley. This land is used mainly for ranching, livestock grazing, and alfalfa production. Land uses on the federally managed winter range includes grazing and oil-gas exploration. Impacts to management can also come from wilderness designation, the proposed CO_2 project for the Antone Flat-Death Hollow area, and road building associated with resource extraction projects, including logging.

Winter Range Description

The winter range is large enough to support all of the deer summering on the unit. With a few localized exceptions, it is in mostly good condition. Huff and Coles (1966) drew the upper limits of the winter range between 8,000 and 8,400 feet and the lower limits between 6,500 and 7,000 feet. The pinyon-juniper and sagebrush types with various combinations of the two, dominates the winter range. An exception is the Ponderosa pine-bitterbrush type which also reportedly receives a significant amount of deer use during mild winters. South of Boulder Mountain, there is abundant winter range. However, much of the country is slickrock canyons and mesas that support few deer. Most wintering takes place on the lower slopes and at the base of the mountain. The upper limits of the normal winter range are fairly uniform at 8,000 feet across the south slopes of the Boulder Mountain. Seven thousand feet is the usual upper limit during severe winter conditions. The lower limit for most wintering deer on the south side of the unit is Highway 12.

On the west side of the Aquarius Plateau between Antimony and Widtsoe, winter range is more restricted. The mountain drops off steeply from Griffin Top to the river valley. Deer can typically utilize vegetation up to 9,000 feet during normal winters, but are limited to an upper limit of around 8,000 feet during severe winters. The lower boundary for severe winters is the bottom of the valley on the Sevier River, which is approximately 6,500 feet.

Pinyon-juniper encroachment and deer depredation of alfalfa fields and haystacks in Grover, Teasdale, and Government Creek areas have been reported to be problems. Revegetation projects by both the Forest Service and BLM have helped reduced the depredation problems and provided another important source of winter and spring forage. Further improvements are needed in Government Creek, Pine Creek, Birch Spring, Rabbitbrush Spring, Happy Valley, and Dry Bench.

Pinyon-juniper is the prevalent range type on most of the unit. There are different subtypes depending on elevation. These vegetative types range from dense pinyon-juniper on mountain slopes to sparse pinyon-juniper-grass, sparse pinyon-juniper-sagebrush-grass, and pinyon-juniper-mountain brush on slickrock. The sparse pinyon-juniper-sage-grass type covers the most land. Ponderosa pine and mountain brush occupy the upper edges of the winter range. The amount of open sagebrush flats is limited, but they are especially critical for survival in severe winters. Burned or chained and seeded areas provide important winter range. Most of these treatments were not completed before the initial range inventory in 1965.

Summer Range

Summer range is limited to specific areas on Parker Mountain and Boulder Mountain. Boulder Mountain contains approximately 50,000 acres above 10,500 feet (Christensen and Bogedahl 1983). This high summer range is unsuitable for fawning and receives only light deer use in late summer. Most fawning and summer use is concentrated underneath the lava rock rim where stands of aspen, fir, and Englemann spruce are interspersed with sage flats and meadows. As a result of fire suppression, the trend is toward a more dense Englemann spruce climax community. Logging and/or prescribed burns will be necessary in the future to maintain this important habitat in a seral stage, which is more productive and more favorable to big game. Lower down the slopes, ponderosa pine with its associated mountain brush understory receives insignificant summer use. Summer range on Parker Mountain is more limited to the higher southern end, where aspen stands in association with big sagebrush and antelope bitterbrush provide excellent fawning areas.

Key Areas

All along the south and west sides of Boulder Mountain there are areas that, due to their pattern of use, forage value, and location, have demonstrated their importance to big game in mild and severe winters. Key areas on the south side include burns in the Deer Mountain area, ponderosa-mixed mountain brush flats, and ridges at around 8,000 feet at Nazer Draw, Whites Flat, and Allen Canyon. Chained areas are also key to their winter survival, and in severe winters, low pinyon-juniper-sage mesas are utilized. On the west side, deer winter at higher elevations if available. In hard winters, native range is severely limited with the low bench above Black Canyon being a key area.

The key areas for severe winter range on the south side of the unit are represented by studies on Antone Flat, Black Ridge, Steep Creek Bench, and New Home Bench. Salt Gulch is an important area for deer in late winter and much like New Home Bench, is managed by the Forest Service and allocated for summer cattle grazing. There is practically unlimited, low elevation pinyon-juniper range on BLM land. This type was not as thoroughly surveyed as the other types because of it's almost unlimited abundance. One study was put in this type on Steep Creek Bench because cattle are moved through this area in spring and winter. Antone Flat supports one of the few large sagebrush flats on the south side and is used heavily by wintering deer. Due to access difficulties, the Antone Flat study was located outside the key area on a ponderosa pine-mountain

brush-slickrock site. The flat has not been grazed by domestic livestock for 20 years. The study on Black Ridge, just southeast of Boulder, samples a small sagebrush flat. This mesa is privately owned and was up for sale at the time the study was established in 1985. The mesa top has since been developed and subdivided for houses. The one study on the Kanab Resource Area, Coal Bench, is a chained-seeded area grazed by cattle in the spring on a 3 pasture deferred-rotation grazing system.

The severe winter range sampled on the west side near Antimony is represented by the Black Canyon trend study. The area is open black sagebrush-Wyoming big sagebrush benches. The land is managed by the BLM and much is adjacent to privately owned hay fields. The BLM and state land is grazed by cattle in the spring.

Two studies were set up to monitor trends in the important aspen type on summer range. Some of the aspen areas are used heavily by both big game and cattle. The trend study areas receive deferred rotation summer cattle grazing. Timber harvest is on going or completed on areas near these study sites.

The winter range studies on the Boulder unit can be put into 3 general key vegetative types; low pinyon-juniper-sagebrush mesas, mid-elevation burns and chainings, and mixed mountain brush ranges up to 8,000-9,000 feet. Some general conclusions can be made with regard to these community types. The desired plant community for the lower elevation types would most likely have Wyoming big sagebrush as the key species. Low precipitation is the major limiting factor to the density and vigor of the vegetation. The key burned areas are important in the spring for their herbaceous component for deer and elk. These areas should support a high percentage of grasses, with suitable quantities of grass forage left standing after livestock grazing. Desirable browse species can be seeded or planted. The chainings provide some increased productivity and diversity to an understory typically almost nonexistent with the dense mature stands of pinyon-juniper. However, a monoculture of crested wheatgrass would also not be the most desirable for big game. Desirable species such as bitterbrush, cliffrose, serviceberry, and big sagebrush should be encouraged. Perennial forbs such as alfalfa, sweet clover and others are also desirable additions on the treated areas. The higher elevation ranges were sampled with five trend studies, which support a variety of range types and vegetation. The key browse species for these higher elevational ranges are bitterbrush and mountain big sagebrush. These sites typically have high diversity and a good mix of grasses, forbs, and browse.

Herd Unit Management Objectives

The management objective for the entire Plateau unit (subunits A, B, & C) is to reach a winter population of 25,000 deer (DeBloois 2001). The objective for the Boulder subunit, 25C is to reach a target winter deer herd size of 8,500 with a post season herd composition of 15 bucks to 100 does and 30% of those bucks being 3 point or better (DWR 1998). The estimated 1996 population for subunit 25C was 6,000 deer.

Elk are not subjected to the same winter constraints as deer, therefore, the elk herd is wintering well on most of the unit and increasing in numbers. This elk herd is the result of 87 elk that were transplanted from the Manti Unit in 1977 and another 72 more were brought from the same source in 1978. The first hunt took place in 1980 when 25 limited entry bull permits were issued. The herd has continued to increase and expand, allowing more liberal hunts until open bull hunts began in 1984. Most of these elk are located on the south side of the unit, but some elk do reside year-round on the east side of Boulder Mountain and a smaller number summer above Antimony. These elk winter near Otter Creek and on the northwest end of Parker Mountain. A number of elk which summer on the Fish Lake unit also winter on Parker Mountain. The population objective for subunit 25C is to achieve a winter population of 1,500 elk with a minimum post season composition of 8 bulls to 100 cows and at least 4 of these bulls being 2½ years of age or older (DWR 1998).

The Parker Mountain area of unit 25C contains an excellent antelope herd which is the result of transplants into the area in 1964 and 1965. Browse-forb dominated plant communities and a rigorous predator control

program have created favorable conditions for the antelope to increase. Over 1,100 antelope have been moved from this unit to other areas of the state in the past.

Study Establishment

Interagency personnel, including Forest Service, BLM, and DWR employees met in Teasdale in July 1985 and in Escalante in July 1987 to select several sites for permanent range trend studies. These sites include areas used by antelope, elk, and deer and were considered critical areas for monitoring range trend. Each site was read during the summer of either 1985 or 1987 and most were read again in 1991, 1994, 1998 and 2003. Two special studies were established in 1997 north of Antimony to monitor winter range that was being heavily utilized by both elk and livestock. These studies were reread in 2003 and are contained in this report. One additional study was established in 2003 on Parker Mountain to monitor the recovery of a mountain big sagebrush community following a meadow aerator treatment.

SUMMARY

WILDLIFE MANAGEMENT UNIT 25C - PLATEAU, BOULDER

Trend studies in the Boulder unit were originally established in 1985 and 1987. The majority of these studies sample winter range but several trend studies sample summer and transitional ranges. Fourteen winter range and 6 summer/transitional range trend studies were read in 2003. These were established in 1985 or 1987 and most were reread in 1991, 1994, 1998, and 2003.

Winter Range Trends

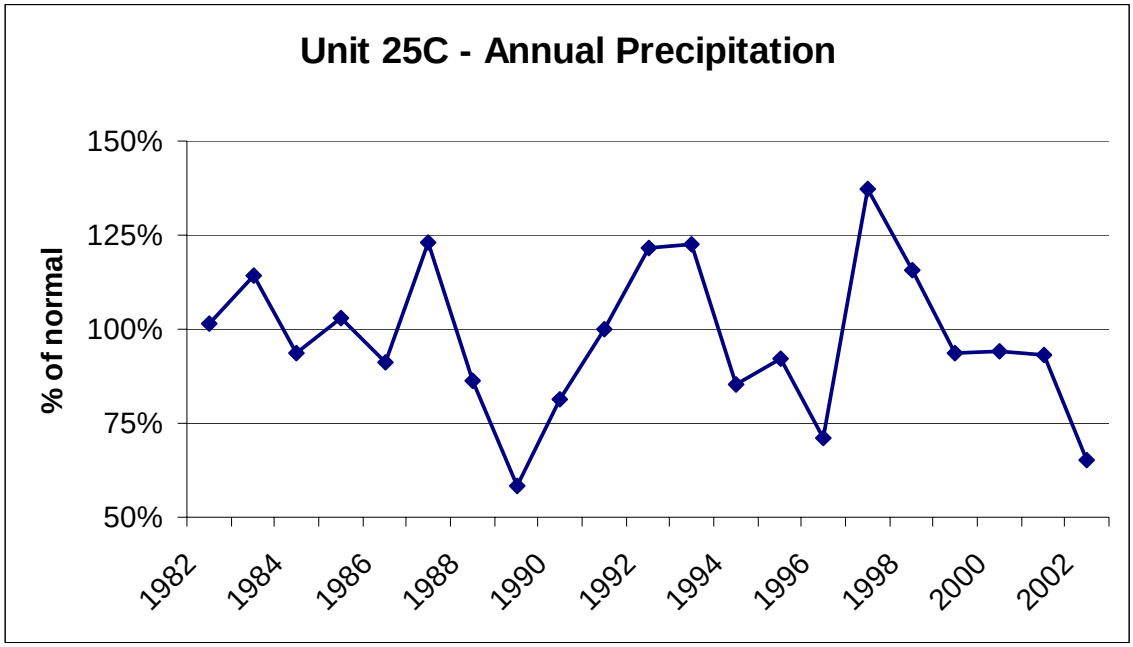
Average winter range trends are slightly down overall for soil, browse, and herbaceous plants. Soil trends were stable at 6 sites, down at 6 sites and upward on 2 studies. Browse trends were stable on 5 sites and down at 8. The only improving browse trend occurred at Coal Bench 25C-23. Nine of the 12 winter range sites showed increasing values for percent decadence on sagebrush. Average percent decadence increased nearly 2 fold from 19% to 32%. Young recruitment, or the proportion of young sagebrush plants in a population, declined at 10 of the 12 sites from an average of 18% to 7%. Herbaceous trends were stable at only 1 site, Black Canyon 25C-26, and downward on the other 13 sites. Drought conditions greatly effected herbaceous production with 11 of the 14 trend studies showing a decline in perennial grass cover. Average perennial grass cover declined 34% from 15% to 10%. All 14 studies displayed a decline in the sum of nested frequency of perennial grasses. Perennial forbs were also negatively effected by drought conditions. Ten sites showed a decline in average cover of perennial forbs while 12 sites had a decline in sum of nested frequency. Cover of perennial forbs declined 57% since 1998, from an average of 3% to 1%.

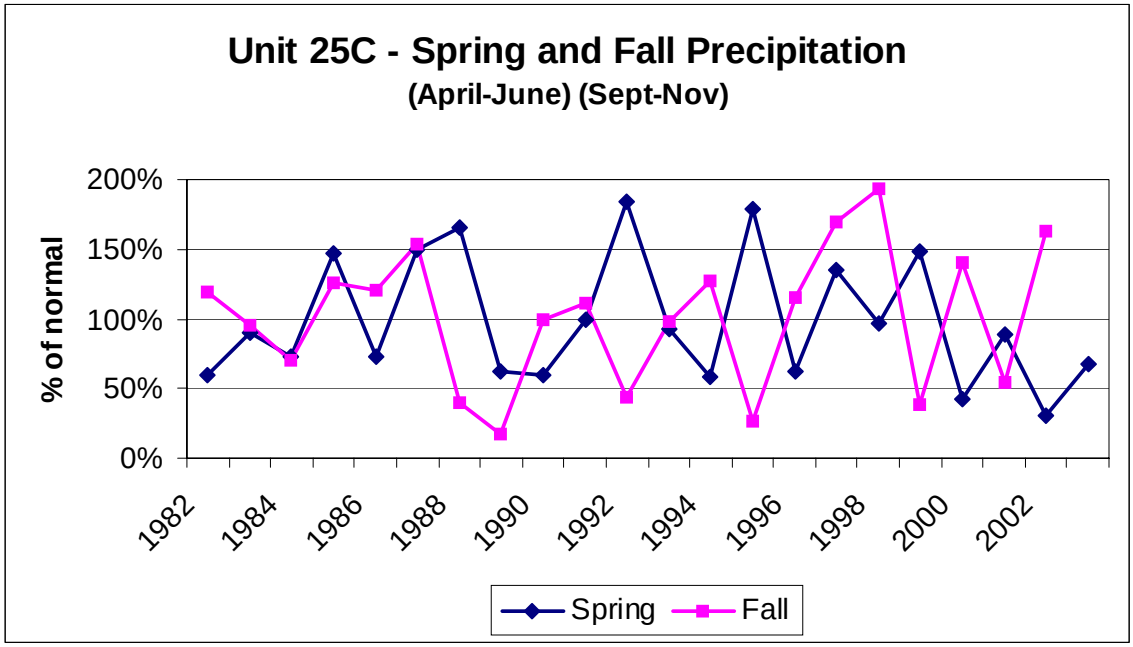
Summer/Transitional Range Trends

Six trend studies sample transitional or summer ranges. These sites showed mostly stable soil trends with the exception of Varney-Griffin Chaining 25C-17 and North Creek 25C-28 which had downward trends for soil. Browse trends were stable or improving on all sites except for North Creek which showed a downward trend due to fire. Herbaceous plants are the most important aspect of transitional and summer ranges. Herbaceous trends were down on 5 sites and up at only 1 site, North Creek. Average perennial grass cover declined 33% since the 1998 reading, from an average of 18% to 12%. Four of the 6 study sites also showed a decline in cover and sum of nested frequency for perennial forbs. Perennial forb cover declined by 40% from an average of 12% to 7%.

Drought conditions are responsible for these trends. Precipitation data from weather stations surrounding the unit show below normal annual precipitation for 2002 and near normal precipitation from 1999 to 2001 (Utah climate Summaries 2004). However, spring precipitation (May to June), which is critical for herbaceous plants and shrubs, has been well below normal for the past 4 spring periods (2000 to 2003), averaging only 57% of normal. Spring precipitation in 2000 and 2002 were especially low at 42% and 31% of normal respectively. Precipitation graphs and trends for each study site can be found below.

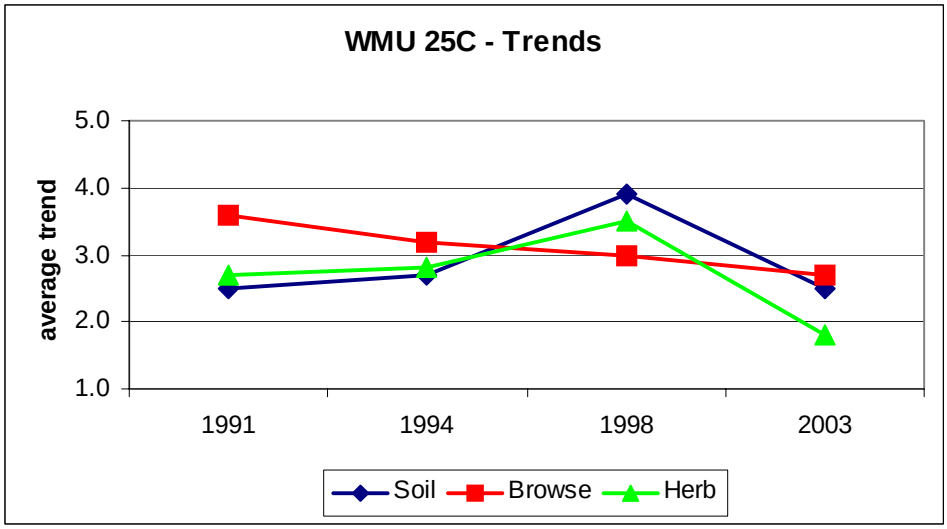
Below are precipitation graphs for the Boulder unit. Data represents percent of normal precipitation averaged for 5 weather stations which include Capital Reef National Park, Escalante, Koosharem, Angle, and Boulder (Utah Climate Summaries 2004).





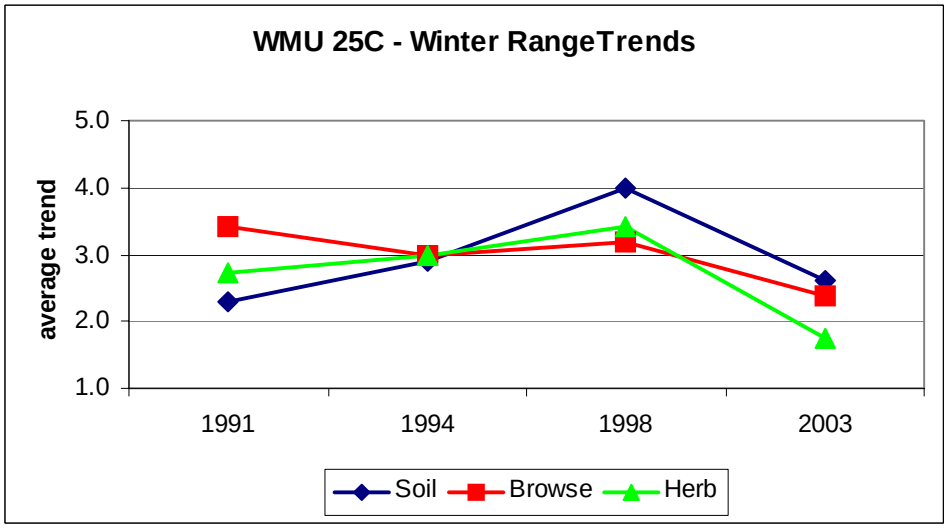
Unit 25C Average Trends

	1991	1994	1998	2003
Soil	2.5	2.9	3.9	2.5
Browse	3.6	3.2	3.0	2.7
Herb	2.7	2.8	3.5	1.8
	20 sites	13 sites	20 sites	20 sites



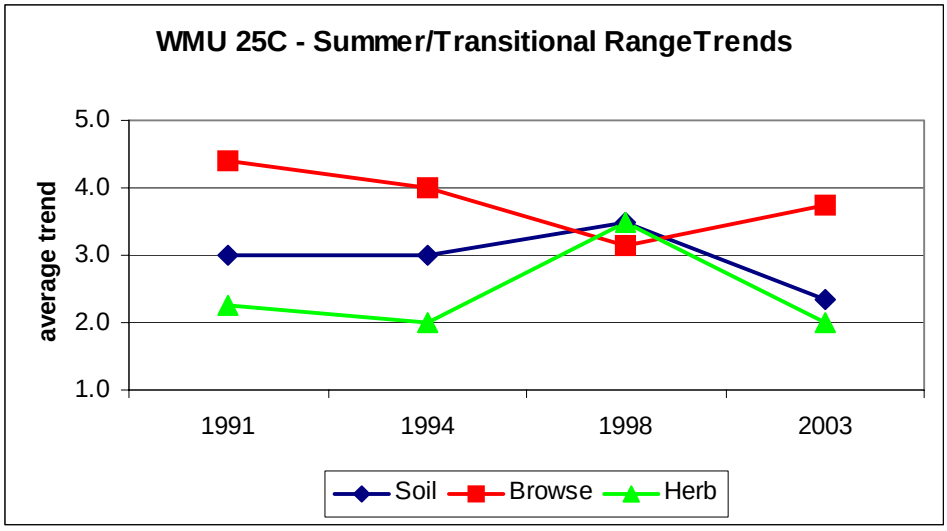
Unit 25C Winter Range Trends

	1991	1994	1998	2003
Soil	2.3	2.9	4.0	2.6
Browse	3.4	3.0	3.2	2.4
Herb	2.7	3.0	3.4	1.8
	14 sites	10 sites	14 sites	14 sites



Unit 25C Transitional/Summer Range Trends

	1991	1994	1998	2003
Soil	3.0	3.0	3.5	2.3
Browse	4.4	4.0	3.1	3.8
Herb	2.3	2.0	3.5	2.0
	6 sites	3 sites	6 sites	6 sites



Trend Summary

	Category	1985	1991	1994	1998	2003
25C-1 Yergy	soil	est	2	1	5	2
	browse	est	5	3	3	3
	herbaceous understory	est	3	3	3	2
25C-2 Wildcat	soil	est	1	4	5	2
	browse	est	5	3	3	3
	herbaceous understory	est	4	3	4	1
25C-3 Happy Valley	soil	est	3	4	3	4
	browse	est	2	2	3	4
	herbaceous understory	est	4	3	5	2
25C-4 North Slope	soil	est	3	NR	3	3
	browse	est	3	NR	3	3
	herbaceous understory	est	3	NR	3	1
25C-5 Giles Hollow	soil	est	3	2	4	3
	browse	est	2	3	3	3
	herbaceous understory	est	2	3	4	2
25C-6 Terza Flat	soil	est	2	4	2	2
	browse	est	1	3	3	1
	herbaceous understory	est	1	3	3	1
25C-7 Cedar Grove	soil	est	3	NR	4	2
	browse	est	3	NR	2	2
	herbaceous understory	est	4	NR	2	2
25C-8 South Narrows	soil	est	2	3	3	3
	browse	est	4	3	2	1
	herbaceous understory	est	3	4	3	2

(1) = down, (2), slightly down, (3) = stable, (4) = slightly up, (5) = up,
(est) = established, (n/a) = no trend, (susp) = suspended, NR = not read

	Category	1987	1991	1994	1998	2003
25C-9 Dry Wash	soil	est	3	3	3	4
	browse	est	2	3	3	2
	herbaceous understory	est	1	4	3	2
25C-12 Nazer Draw	soil	est	2	3	5	3
	browse	est	5	3	3	2
	herbaceous understory	est	2	3	4	1
25C-13 Short Neck	soil	est	3	3	5	3
	browse	est	4	4	4	3
	herbaceous understory	est	3	1	4	1
25C-14 New Home Bench	soil	est	2	NR	4	3
	browse	est	3	NR	4	1
	herbaceous understory	est	3	NR	3	1
25C-15 Steep Creek Bench	soil	est	2	2	5	1
	browse	est	2	3	2	2
	herbaceous understory	est	3	3	4	2
25C-17 Varney-Griffin Chaining	soil	est	3	NR	5	1
	browse	est	3	NR	5	3
	herbaceous understory	est	2	NR	3	1
25C-20 Baldys	soil	est	3	3	3	3
	browse	est	5	3	3	5
	herbaceous understory	est	3	3	4	2
25C-23 Coal Bench	soil	est	1	NR	5	2
	browse	est	5	NR	3	4
	herbaceous understory	est	2	NR	3	1
25C-25 Center Creek	soil	est	3	3	4	3
	browse	est	4	5	5	5
	herbaceous understory	est	4	1	4	2

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	Category	1987	1991	1994	1998	2003
25C-26 Black Canyon	soil	est	3	NR	3	3
	browse	est	5	NR	3	2
	herbaceous understory	est	3	NR	3	3
25C-27 Poison Creek Bench	soil	est	3	3	3	3
	browse	est	3	4	1	5
	herbaceous understory	est	2	2	5	2
25C-28 North Creek	soil	est	3	NR	3	1
	browse	est	5	NR	2	1
	herbaceous understory	est	2	NR	2	4
25C-31 Parker Mountain Aerator	soil					est
	browse					est
	herbaceous understory					est
	Category				1997	2003
25R-2 Lower Meadow Estates	soil				est	2
	browse				est	3
	herbaceous understory				est	4
25R-3 Upper Meadow Estates	soil				est	3
	browse				est	2
	herbaceous understory				est	1

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